

REMARKS

Applicant requests reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks.

Claims 10-22 are pending in the application, with Claims 10, 18, 21, and 22 being independent. Claims 1-9 have been cancelled herein without prejudice to or disclaimer of the subject matter recited therein. Claims 10-22 have been newly added. Support for the new claims can be found in the original disclosure. Therefore, no new matter has been added.

In the Office Action, Claims 1-9 were objected-to for various informalities. Claim 8 was rejected under 35 U.S.C. § 112, first paragraph as being a single means claim. Claims 1-9 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-9 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,539,433 (Kawai et al.) in view of European Patent Application Publication No. EP 0 811 488 A2 (Tamura). These objections and rejections are respectfully traversed. Nevertheless, the objections and rejections are rendered moot in view of the cancellation of Claims 1-9 herein.

Applicant took into account the objections and rejections noted in the Office Action in formulating new Claims 10-22, and submits that new Claims 10-22 comply with all aspects of § 112, and are in condition for allowance.

Independent Claim 10 is directed to a print head substrate on which is provided a print head assembly. The assembly comprises an array of printing elements divided into a plurality of groups of printing elements, a driving circuit for selectively driving the printing elements, a selection circuit common to the plurality of groups of printing elements of the array for selecting a printing element to be driven in each group, and data supply means for

supplying driving data to the driving circuit. The selection circuit has common lines coupled to the plurality of groups of printing elements of the array for selecting a printing element to be driven in each group. The data supply means comprises a plurality of data supply circuits each arranged to supply data for a corresponding set of the printing elements, the data supply circuits being spaced apart in the direction of the array with each data supply circuit being arranged adjacent to the corresponding set of printing elements.

Thus, in the invention of independent Claim 10, data is supplied in parallel to each set of printing elements from a corresponding one of the data supply circuits arranged near the set of printing elements, while a printing element to be driven in each group is selected by common signal lines from the selection circuit.

By virtue of this feature, wiring lines from data supply circuits to the respective set of printing elements are shortened, thereby reducing the wiring area and the total area of the print head substrate. In addition, driving timing is commonly controlled by the common signal lines from the selection circuit.

The Kawai et al. patent discloses a print head comprising an array of printing elements (15), a driving circuit (Q), and data supply means (16, 17), as shown in Figs. 2 and 13 of that patent. However, in the Kawai et al. patent, the data supply means includes only one data supply circuit (16, 17). Thus, the Kawai et al. patent lacks the feature of Claim 10 of a plurality of data supply circuits each arranged to supply data for a corresponding set of the printing elements, the data supply circuits being spaced apart in the direction of the array with each data supply circuit being arranged adjacent to the corresponding set of printing elements. As a result, the length of wiring lines from the data supply circuit to the array of printing

elements in the Kawai et al. patent is longer than that in the print head substrate according to Claim 10.

The Tamura publication is directed to a recording head and apparatus. However, the print head disclosed in the Tamura publication also includes only one data supply circuit, which includes a shift register and a latch, as shown in Figs. 5, 7, 8, and 10 of that patent. Accordingly, the Tamura publication fails to remedy the foregoing deficiency in the Kawai et al. patent noted above with respect to Claim 10. In particular, the Tamura publication fails to disclose or suggest a plurality of data supply circuits each arranged to supply data for a corresponding set of the printing elements, the data supply circuits being spaced apart in the direction of the array with each data supply circuit being arranged adjacent to the corresponding set of printing elements, as recited in independent Claim 10.

For at least the foregoing reasons, Applicant submits that independent Claim 10 is patentable over the cited documents, whether those documents are taken alone or in combination (assuming for the sake of argument that the documents can even be combined in the manner set forth in the Office Action).

Independent Claims 18, 21, and 22 are directed to a print head, a print head cartridge, and a printing apparatus, respectively, and each recites features corresponding to those of Claim 10 discussed above. Thus, Applicant submits that Claims 18, 21, and 22 are also patentable over the cited documents for at least the same reasons as Claim 10.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references

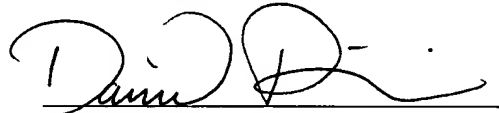
against the independent claims herein. Therefore, the independent claims are believed to be patentable over the art of record.

The dependent claims are also patentable for the same reasons as the respective independent claims from which they depend, as well as for the additional features that they recite. Individual consideration of each dependent claim is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'David A. Divine', is written over a horizontal line.

Attorney for Applicant
David A. Divine
Registration No. 51,275

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3800
Facsimile: (212) 218-2200
DWP/DAD/tmc

DC_MAIN 206177v1